

[4910-13-U]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [65 FR 48353 8/8/2000]

[Docket No. 99-NE-10-AD; Amendment 39-11841; AD 2000-15-09]

RIN 2120-AA64

Airworthiness Directives; Honeywell International Inc. TFE731-2, -3, -4, and -5 Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to Honeywell International, Inc. (formerly AlliedSignal Inc. and Garrett Turbine Engine Company) high pressure compressor (HPC) impellers installed on TFE731-2, -3, -4, and -5 series turbofan engines. This AD requires the removal and inspection of the HPC impeller and, if necessary, replacement of the HPC impeller with a serviceable impeller. This amendment is prompted by an incident of an uncontained impeller failure due to cracking in the seal relief area of the HPC impeller. The actions specified by this AD are intended to prevent HPC impeller failure due to fatigue cracking.

DATES: Effective October 10, 2000. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of October 10, 2000.

ADDRESSES: The service information referenced in this AD may be obtained from Honeywell Engines and Systems (formerly AlliedSignal) Technical Publications and Distribution, M/S 2101-201, P.O. Box 52170, Phoenix, AZ 85072-2170; telephone: (602) 365-2493 (General Aviation), (602) 365-5535 (Commercial), fax: (602) 365-5577 (General Aviation), (602) 365-2832 (Commercial). This information may be examined at the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Joseph Costa, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, Transport Airplane Directorate, 3960 Paramount Blvd., Lakewood, CA 90712-4137; telephone: (562) 627-5246, fax: (562) 627-5210.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) applicable to Honeywell International, Inc. (formerly AlliedSignal Inc. and Garrett Turbine Engine Company) high pressure compressor (HPC) impellers installed on TFE731-2, -3, -4, and -5 series turbofan engines was published in the **Federal Register** on July 28, 1999 (64 FR 40789). That action proposed to require replacement of the HPC impeller with a serviceable impeller, which has been eddy-current inspected, at the next core zone inspection (CZI) or at the next access to the HPC module, and repetitive inspections at each subsequent CZI or each subsequent access to the HPC impeller for cause if the impeller has more than 1,000 cycles since the last eddy current inspection (ECI). The NPRM was prompted by the failure of a high pressure compressor (HPC) impeller, part number (P/N) 3073394-1, that separated and exited from a TFE731-3R-1D turbofan engine. Following that event, low-temperature fatigue testing with a sustained peak hold time (dwell) at higher than engine-operating stresses indicated that normal cyclic fatigue lives may be influenced by dwell times and an unfavorable titanium macrostructure. The FAA determined that low-cycle fatigue (LCF) cracking in high stressed areas of the HPC impeller may lead to an uncontained impeller separation.

The FAA received a number of comments on that proposal. As a result of those comments, the FAA published a supplemental notice of proposed rulemaking (NPRM) in the **Federal Register** on March 7, 2000 (65 FR 11942). This supplemental NPRM revised the proposed rule by eliminating the terminating action and adding impeller P/Ns to the suspect impeller population. The supplemental NPRM also clarified certain portions of the proposed AD based on comments received from the public.

Conclusion

Interested persons have been afforded an opportunity to participate in the making of this amendment. No comments were received on the supplemental proposal or the FAA's revised economic analysis. All comments on the original NPRM were addressed in the discussion of the supplemental notice. The FAA has determined that air safety and the public interest require the adoption of the rule as proposed.

Economic Analysis

There are approximately 7,510 engines of the affected design in the worldwide fleet. The FAA estimates that 5,482 engines installed on aircraft of U.S. registry will be affected by this AD, that it will take approximately three work hours per engine to accomplish the required actions, and that the average labor rate is \$60 per work hour. The FAA also estimates that some of the impellers will be replaced and that each impeller will cost approximately \$45,000. Based on these figures, the FAA estimates the total cost impact of the AD on U.S. operators for the next four years will be \$2,201,760.

Regulatory Impact

This rule does not have federalism implications, as defined in Executive Order 13132, because it does not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Accordingly, the FAA has not consulted with state authorities prior to publication of this rule.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption "ADDRESSES."

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE

REGULATORY SUPPORT DIVISION
P.O. BOX 26460
OKLAHOMA CITY, OKLAHOMA 73125-0460



U.S. Department
of Transportation
**Federal Aviation
Administration**

AD's are posted on the internet at <http://av-info.faa.gov>

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2000-15-09 Honeywell International Inc.: Amendment 39-11841. Docket 99-NE-10-AD.

Applicability

Honeywell International Inc. (formerly AlliedSignal Inc. and Garrett Turbine Engine Company) TFE731-2, -3, -4, and -5 series turbofan engines with high pressure compressor (HPC) impeller part numbers (P/Ns) 3073393-1, 3073394-1, 3073433-1, 3073434-1, 3073398-All (All denotes all dash numbers), 3073435-All, and 3075171-All, installed on, but not limited to, Avions Marcel Dassault-Breguet Aviation (AMD/BA) Falcon 10, Dassault-Aviation Mystere-Falcon 50, and 900 series airplanes; Dassault Aviation Mystere-Falcon 20 series airplanes; Learjet Inc. Models 31, 35, 36, and 55 series airplanes; Lockheed-Georgia Corporation 1329-23 and -25 series airplanes; Israel Aircraft Industries Ltd. 1124 series and 1125 Westwind series airplanes; Cessna Aircraft Co. Model 650 Citation III, VI, and VII series airplanes; Raytheon Aircraft Co. HS-125 series airplanes; and Sabreliner Corporation NA-265-65 airplanes.

Note 1: This airworthiness directive (AD) applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (e) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance

Required as indicated, unless accomplished previously.

To prevent failure of the HPC impeller due to fatigue cracking, accomplish the following:

Initial Inspection

(a) Remove and inspect the applicable HPC impeller in accordance with Section 2.A. of the Accomplishment Instructions of AlliedSignal Inc. Alert Service Bulletin (ASB) TFE731-A72-3641, Revision 1, dated October 20, 1999, or ASB TFE731-A72-3641 dated November 24, 1998, and, if necessary, replace the impeller with a serviceable impeller at the earlier of the following:

- (1) At the next core zone inspection (CZI) after the effective date of this AD; or
- (2) At the next access to the HPC module after the effective date of this AD.

Repetitive Inspection

(b) Thereafter, remove and inspect the applicable HPC impeller in accordance with Section 2.A. of the Accomplishment Instructions of ASB TFE731-A72-3641, dated November 24, 1998, or ASB TFE731-A72-3641, Revision 1, dated October 20, 1999, and, if necessary, replace the impeller with a serviceable impeller, whenever either of the following conditions are met:

- (1) At every CZI; or
- (2) At access to the HPC module if the impeller has accumulated more than 1,000 cycles since the last Eddy Current Inspection (ECI).

Definitions

(c) This AD defines access to the HPC module as whenever the low pressure compressor case is removed from the compressor interstage diffuser.

(d) For the purposes of this AD, a serviceable impeller is defined as an impeller that complies with all applicable visual, dimensional, and fluorescent penetrant inspections requirements for the level of maintenance being accomplished, as contained in the Heavy Maintenance Manual, and is either an impeller with fewer than 1000 engine operation cycles since new or an impeller with fewer than 1000 engine operation cycles since last ECI.

Alternative Method of Compliance

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Los Angeles Aircraft Certification Office (LAACO). Operators shall submit their request through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, LAACO.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the LAACO.

Special Flight Permits

(f) Special flight permits may be issued in accordance with §§21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the aircraft to a location where the requirements of this AD can be accomplished.

Documents Incorporated by Reference

(g) The actions required by this AD shall be done in accordance with the following AlliedSignal Inc. Alert Service Bulletins:

Document No.	Pages	Revision	Date
TFE731-A72-3641	10	Original	November 24, 1998
Total pages: 10			
TFE731-A72-3641	12	1	October 20, 1999
Total pages: 12			

This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Honeywell Engines and Systems (formerly AlliedSignal) Technical Publications and Distribution, M/S 2101-201, P.O. Box 52170, Phoenix, AZ 85072-2170; telephone: (602) 365-2493 (General Aviation), (602) 365-5535 (Commercial), fax: (602) 365-5577 (General Aviation), (602) 365-2832 (Commercial). Copies may be inspected at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC.

Effective Date

(h) This amendment becomes effective on October 10, 2000.

FOR FURTHER INFORMATION CONTACT: Joseph Costa, Aerospace Engineer, Los Angeles Aircraft Certification Office, FAA, Transport Airplane Directorate, 3960 Paramount Blvd., Lakewood, CA 90712-4137; telephone: (562) 627-5246, fax: (562) 627-5210.

Issued in Burlington, Massachusetts, on July 10, 1999.

David A. Downey Assistant Manager, Engine and Propeller Directorate, Aircraft Certification Service